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IS 1784 (1998): Screwed closures for drums [MTD 32: Metal Containers]

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(तीसरा पुनरीक्षण)

Indian Standard

SCREWED CLOSURES FOR DRUMS — SPECIFICATION

(Third Revision)

ICS 55.100

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

February 1998 **Price Group 4**

Metal Containers Sectional Committee, MTD 32

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Metal Containers Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1961, and subsequently revised in 1977 and 1984. While reviewing the standard in the light of experience gained during these years, the Committee decided to revise it to bring in line with the present practices followed by the Indian and overseas industry.

In this revision of the standard, various dimensions and tolerances of 50 mm and 20 mm flanges, bung, capseal and tag ring have been modified. Additional changes have been incorporated to make the standard compatible with the International practices. Also, the standard has been made much broader to facilitate various possibilities of manufacturing the closures, taking clue from the trend all over the world to make only very broad based standard, leaving the specific details to 'as agreed between the manufacturer and purchaser'. Emphasis has been given to functional aspects.

This standard gives only the essential dimensions of bungs and their minimum requirements for ensuring interchangeability and satisfaction of performance in the rough handling of the drums for which they are intended. Detailed designs which may either hinder progress or may result in infringement of certain aspects of design or a patent in this country or elsewhere are not prescribed in this standard.

Screwed closures commonly used on large drums are covered in this standard. Other types of closures for drums are covered in IS 2474 : 1982 'Specification for closures for drums'.

In this revision of standard, necessary assistance has been derived from 'prEN Closure systems for non-removable head (tight head) drums with a total capacity of 20-230 litres' issued by the European Committee of Standardization.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SCREWED CLOSURES FOR DRUMS — SPECIFICATION

(Third Revision)

1 SCOPE

1.1 This standard prescribes the requirements and methods of tests for steel and zinc alloy closures used on drums of nominal capacity of 200 litres with fixed ends [*see* IS 1783 (Part 1) : 1993 'Drums, large, fixed ends: Part 1 Grade A drums (*third revision*)' and IS 1783 (Part 2) : 1988 Drums, large, fixed ends: Part 2 Grade B drums (*third revision*)].

1.2 Two nominal sizes of closures, 50 mm and 20 mm have been covered in this standard.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
513 : 1994	Cold rolled low carbon steel sheets and strips (*fourth revision*)
742 : 1981	Zinc base alloy die castings (*second revision*)
1079 : 1994	Hot rolled carbon steel sheet and strip (*fifth revision*)
1394 : 1984	Glossary of terms relating to metal containers (*third revision*)
1993 : 1993	Single cold reduced tinplate and single cold reduced blackplate-Electrolytic and hot dipped tinplate sheet and blackplate sheet (*third revision*)
2643 (Part 1) : 1975	Dimensions for pipe threads for fastening purposes: Part 1 Basic profile and dimensions (*first revision*)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1394 shall apply.

4 MATERIALS

The various components of the screwed closure assembly are shown in Fig. 1. Materials used for the manufacture of different components of steel closures shall be as given in **4.1**, **4.2**, **4.3** and **4.4**. Supply of capseal and tag ring with closures is optional and as agreed between the supplier and purchaser.

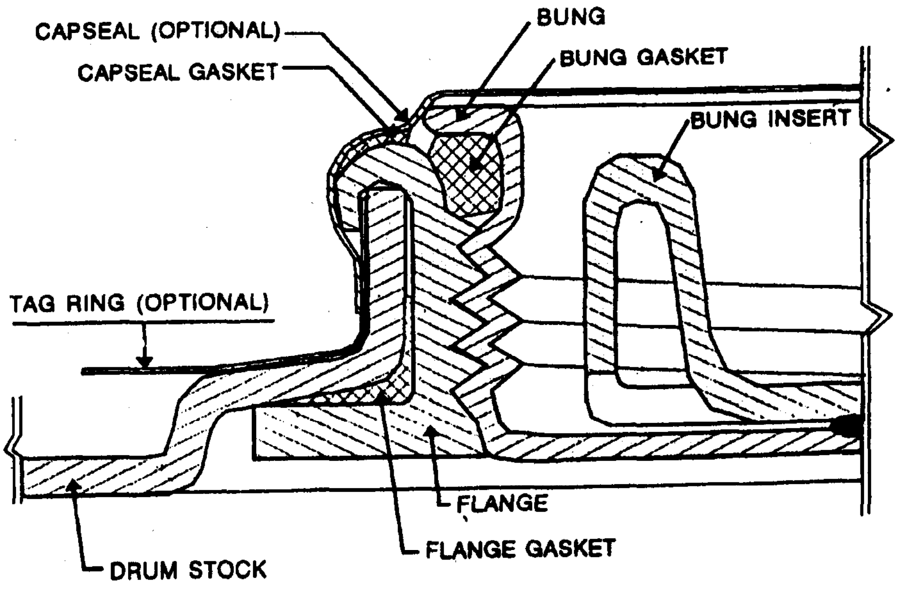


FIG. 1 SCREW CLOSURE ASSEMBLY

4.1 Flange and Flange Gasket

4.1.1 Flanges shall be made from low carbon steel sheet conforming to grade DD or EDD of IS 513 or IS 1079. Other metals and/or configurations may be as agreed between the manufacturer and purchaser. Nominal sheet thickness shall be 2.50 mm.

4.1.2 Flange gaskets shall be made from elastomer. The specific type of elastomer and/or configuration may be as agreed between the manufacturer and the purchaser.

4.2 Bung and Bung Washer

4.2.1 Bungs shall be made from low carbon steel sheet conforming to grade DD or EDD of IS 513 or IS 1079 or zinc alloy conforming to IS 742. Any other material and/or configuration may be as agreed between the manufacturer and purchaser. Nominal sheet thickness for bungs shall be 1.1 to 1.3 mm. Nominal sheet thickness for 50 mm and 20 mm insert shall be 1.6 mm and 2.0 mm respectively.

4.2.2 Bung gaskets shall be made from elastomer or polyethylene. The specific types of elastomer, polyethylene and/or configuration may be as agreed between the manufacturer and purchaser.

4.3 Capseal

4.3.1 Capseals shall be made from tinplate or blackplate conforming to IS 1993. Other materials and/or configurations may be as agreed between the manufacturer and the purchaser. The minimum sheet thickness shall be 0.30 mm. The capseals may be plain or printed.

4.3.2 PVC or any other suitable material shall be flowed-in to form capseal gasket for ensuring leak proofness.

4.4 Tag Ring

Tag ring shall be made from low carbon steel sheet conforming to IS 513. Other materials and/or configurations may be as agreed between supplier and purchaser. Nominal sheet thickness shall be 0.30 mm.

5 MANUFACTURE

5.1 Bungs

Steel bungs shall be deep-drawn, thread rolled and shall have a wrenching insert projection welded to the bottom sump of the bung, as shown in Fig. 3.

5.1.1 The threads on the steel bungs shall be rolled to the profile of parallel pipe threads prescribed in IS 2643 (Part 1).

5.1.2 Zinc alloy bungs shall be pressure die-cast and shall conform to Fig. 6. Two diagonally opposite apertures for sealing purposes shall be provided.

5.2 Flange

The flange shall be pressed and machined.

5.3 Capseal

The capseal shall be pressed to the shape.

5.4 Tag Ring

The tag ring shall be pressed to the required shape.

6 DIMENSIONS AND TOLERANCES

The dimensions of the closures shall be according to Fig. 2 to Fig. 6.

6.1 Two thread profile of the closures 50 mm and 20 mm shall be according to IS 2643 (Part 1).

7 FINISHES

The nature of the external and internal finish shall be as agreed between the supplier and the purchaser.

8 TESTS

8.1 Interchangeability

All flanges and bungs of the same size shall be interchangeable throughout the consignment.

8.2 Air Pressure Test

The bung, bung washer and flange should be assembled on a suitable test fixture. Bung should tightened to a torque specified below:

Bung Size	*Minimum Torque Value*
50 mm	30 to 35 N.m
20 mm	15 to 20 N.m

The assembly shall be subjected to an internal air pressure of 4.0 kg/cm^2. There shall not be any drop of pressure or leakage.

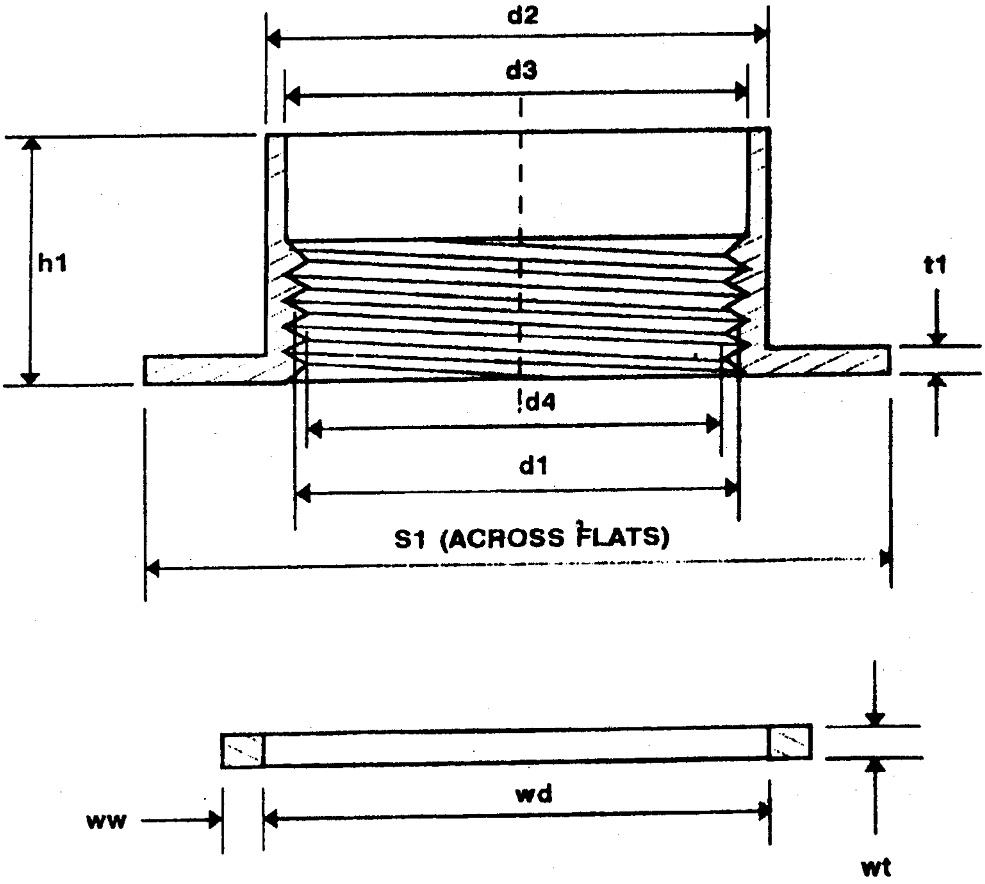
8.3 Torque Test for Steel Bungs

8.3.1 The wrenching insert and threads of bung shall withstand, without breakage, the torque values specified below:

Bung Size	*Minimum Torque Value*
50 mm	220 N.m
20 mm	70 N.m

8.3.2 The collar of the bung shall not show any distortion upto the application of torque values specified below:

Bung Size	*Minimum Torque Value*
50 mm	80 N.m
20 mm	40 N.m

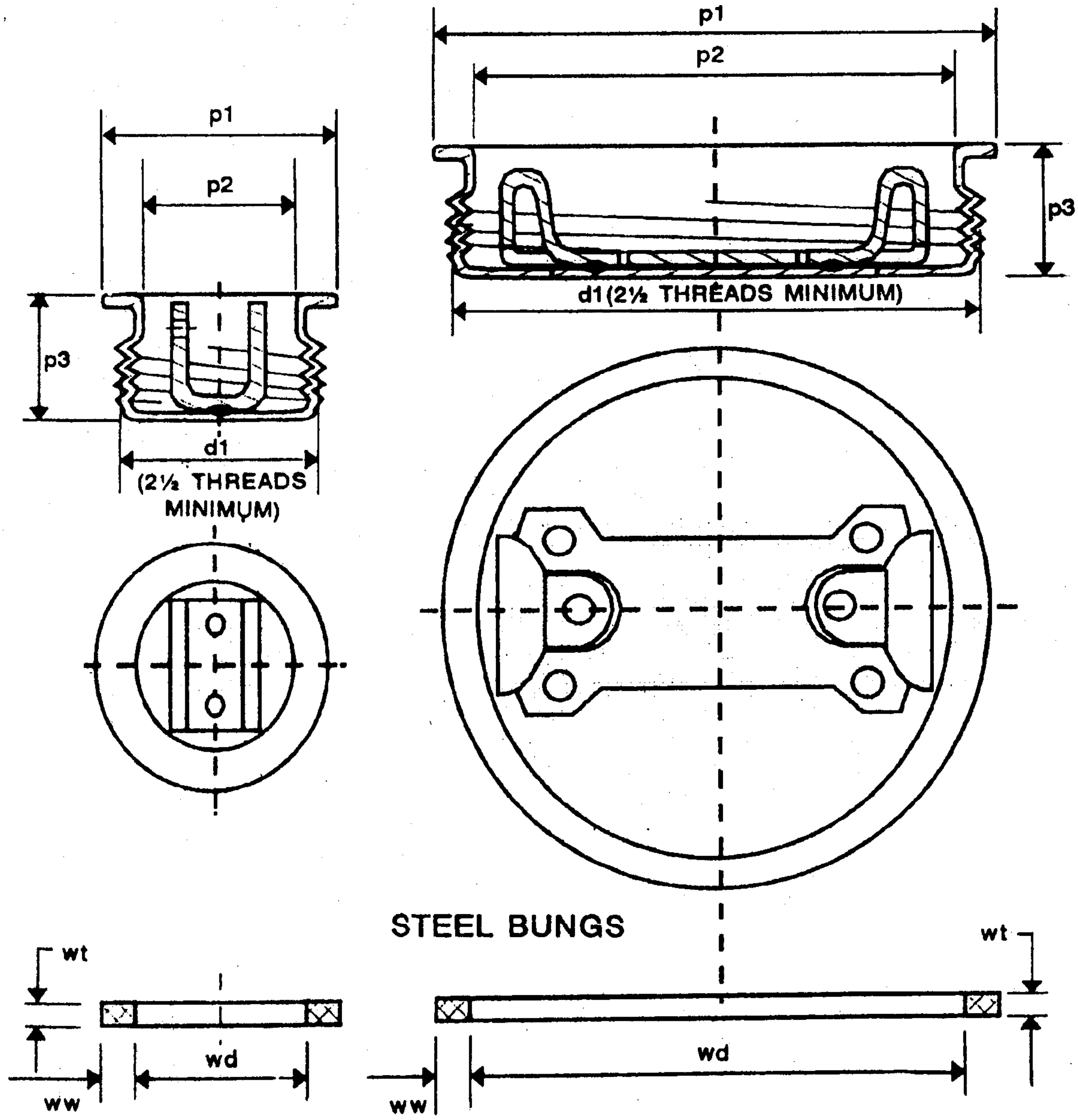


All dimensions in millimetres.

Nominal Size of Flange	Dimensions									
	Steel Flange							Flange Gasket		
	*d*1	*d*2 ± 0.30	*d*3 ± 0.70	*d*4 ± 0.50	*h*1 ± 0.40	*s*1 ± 0.30	*t*1 ± 0.40	*wd* ± 1.00	*ww* ± 0.50	*wt* ± 0.50
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
50	58.13 to 58.59	62.40	60.30	57.10	19.00	77.90	2.80	60.50	3.25	2.60
20	25.28 to 25.58	29.00	27.00	24.50	16.00	43.70	2.50	27.20	2.40	2.60

NOTE — *See* IS 2643 for thread profile only.

FIG. 2 DIMENSIONS OF FLANGE AND FLANGE GASKETS



All dimensions in millimetres.

Nominal Size of Bung	Dimensions						
	Steel Bung				Bung Gasket		
	d1	*p1* ± 0.50	*p2* ± 0.70	*p3* ± 0.50	*wd* ± 1.00	*ww* ± 0.50	*wt* ± 0.50
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
50	57.63 to 58.13	61.30	53.60	15.30	50.50	2.75	2.70
20	24.68 to 25.13	28.10	20.50	13.50	20.30	2.60	2.50

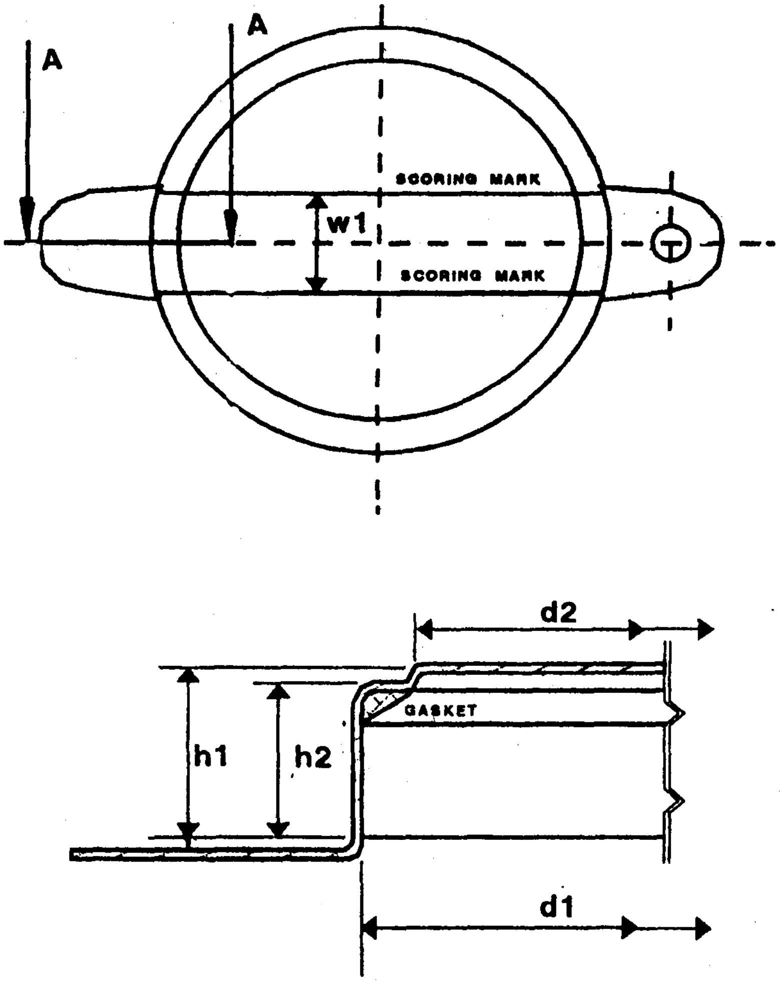
NOTES

1 *See* IS 2543 (Part 1) for thread profile only.

2 Dimension *p*3 is 13.50 ± 0.50 for 1.25 mm thick sheet.

3 Dimension *p*3 is 15.30 ± 0.80 for 1.50 mm thick sheet.

FIG. 3 DIMENSIONS OF BUNG AND BUNG GASKETS

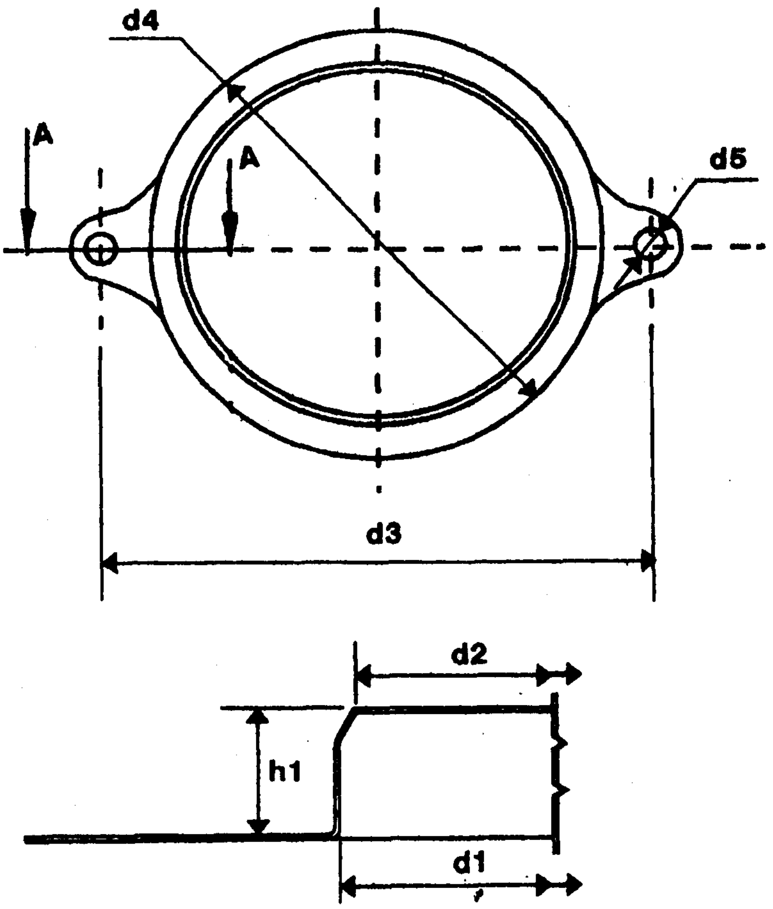


SECTION A-A

All dimensions in millimetres.

Nominal Size of Capseal	Dimensions				
	*d*1	*d*2	*h*1	*h*2	*w*1
(1)	(2)	(3)	(4)	(5)	(6)
50	69.50 ± 1.60	61.50 ± 1.60	11.50 ± 0.60	9.50 ± 0.60	12.00 ± 1.60
20	35.0.0 ± 0.80	29.00 ± 0.80	8.30 ± 0.60	6.80 ± 0.60	10.00 ± 1.60

FIG. 4 DIMENSIONS OF CAPSEALS

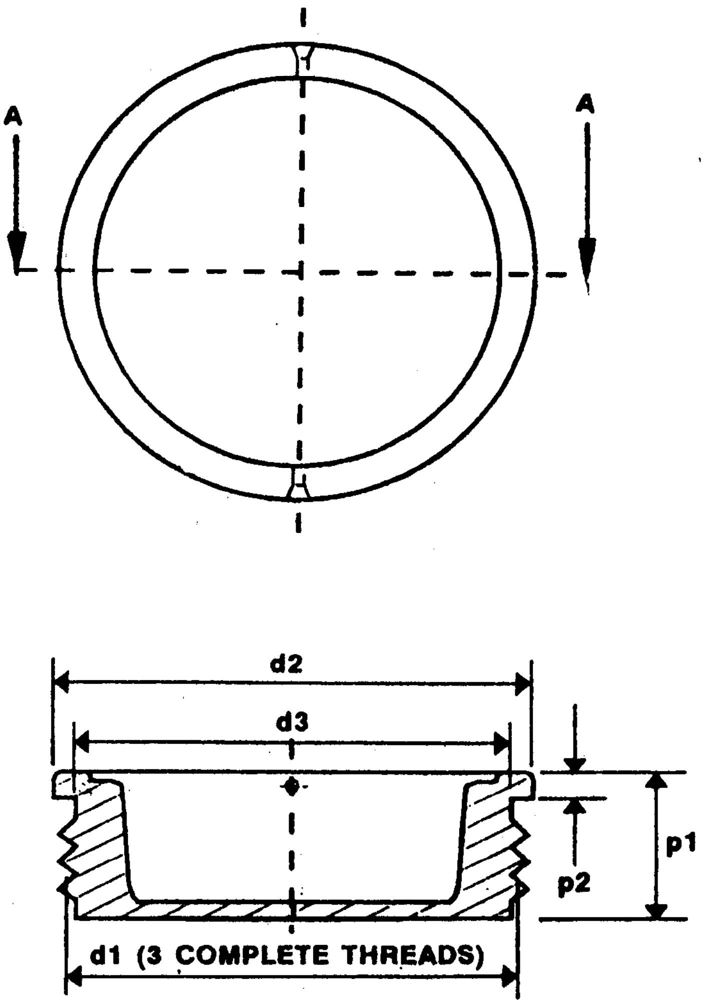


SECTION A-A

All dimensions in millimetres.

Normal Size of Tag Ring	Dimensions					
	*d*1	*d*2	*d*3	*d*4	*d*5	*h*1
(1)	(2)	(3)	(4)	(5)	(6)	(7)
50	67.00 ± 1.60	63.50 ± 040	86.00 ± 2.60	76.00 ± 1.60	5.00 ± 0.40	6.00± 0 .40
20	32.00 ± 1.00	31.00 ± 0.40	46.00 ± 1.50	41.00 ± 1.50	5.00 ± 0.40	5.00 ± 0.40

FIG. 5 DIMENSIONS OF TAG RING



SECTION A-A

All dimensions in millimetres.

Nominal Size of Zinc Bung	Dimensions				
	*d*1	*d*2 ±0.80	*d*3 ±0.80	*p*1 ±0.40	*p*2 ±0.40
(1)	(2)	(3)	(4)	(5)	(6)
50	57.63 to 58.13	61.00	56 00	14.80	3.00
20	24.68 to 25.13	28.00	22.50	13,50	300

NOTE — *See* IS 2643 (Part 1) for thread profile only.

FIG. 6 DIMENSIONS OF ZINC BUNG

8.4 Curling Test for Flanges

The curling test shall be performed on 1 in 1 000 flanges and shall be done on a fixture similar to the flange insertion die. The flange shall not show any crack/leak during curling through 160°.

9 MARKING

9.1 Each bung and flange shall be marked legibly and indelibly with the markings as agreed to between the manufacturer and the purchaser.

9.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

9.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act,* 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 323 01 31, 323 33 75, 323 94 02

Telegrams: Manaksanstha
(Common to all offices)

Regional Offices:		Telephone
Central	Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	323 76 17, 323 38 41
Eastern	1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola CALCUTTA 700054	337 84 99, 337 85 61 337 86 26, 337 91 20
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Southern	C.I.T. Campus, IV Cross Road, CHENNAI 600113	235 02 16, 235 04 42 235 15 19, 235 23 15
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